DOCUMENT RESUME

ED 139 871 UD 016 999

AUTHOR Schofield, Janet W.; Sagar, H. Andrew

TITLE Peer Interaction Patterns in an Integrated Middle School.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE [77]
CONTRACT 400-76-0011
NOTE 32p.
AVAILABLE FROM Dr. Janet Schofield, University of Pittsburgh, Department of Psychology -Room 405 Langley Hall, Pittsburgh, Pa. 15260

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Ability Grouping; Blacks; Caucasians; Class Organization; Classroom Observation Techniques; *Interaction Process Analysis; *Junior High Schools; Junior High School Students; Lower Class; Middle Class; *Peer Groups; *Race; Racial Integration; *School Integration; Sex Differences; Social Adjustment; Urban Environment
IDENTIFIERS Seating Preferences

ABSTRACT

This research investigated the development of interracial interaction patterns among peers in a new open enrollment desegregated middle school. The student interaction analysis conducted for the study attempted to answer the following questions: Is race a significant determinant of the amount of student interaction? Does grade level or sex influence the amount of interracial interaction which occurs? How does sex compare to race as a grouping criterion within the three grade levels studied? Finally, does the amount of interaction between black and white students increase over time? Seating patterns in the cafeteria were observed during the school's first year of operation. Analysis of these patterns for racial aggregation suggested that race was an important grouping criterion for students who have chosen a desegregated school. In the sixth and seventh grades, sex was more important than grouping. Girls showed more racial aggregation than boys. Racial aggregation decreased over time in the sixth and seventh grades but increased in the eighth where there was a predominately white accelerated academic track and a predominately black regular track. (Author/JP)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED139871

JAN 6

Peer Interaction Patterns in an Integrated Middle School

Janet W. Schofield and H. Andrew Sagar

University of Pittsburgh*

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

*The work reported in this paper was funded by the first author's research contract with the National Institute of Education (Contract #400-76-0011). However, all opinions expressed herein are solely those of the authors and no endorsement of the ideas by N.I.E. is implied or intended. The authors' sincere thanks go to David Shaeffer who ably assisted in gathering the data on which this study is based. Send reprint requests to: Dr. Janet Schofield, University of Pittsburgh, Department of Psychology - Room 405 Langley Hall, Pittsburgh, PA 15260.

CG 016999

Abstract

Peer Interaction Patterns in an Integrated Middle School

The interaction of black and white students in a new open enrollment desegregated middle school which meets most of the criteria Allport (1954) specified as important in fostering positive intergroup relations was studied. Seating patterns in the cafeteria were observed during the school's first year of operation. Analysis of these patterns using indices based on Campbell, Kruskal and Wallace's (1966) formula for analyzing racial aggregation suggested: (a) race is an extremely important grouping criterion even for students who have chosen a desegregated school, (b) however, in the sixth and seventh grades sex is an even more important grouping criterion, (c) girls show more racial aggregation than boys, and (d) racial aggregation decreased over time in the sixth and seventh grades but increased in the eighth grade which had a predominately white accelerated academic track and a predominately black regular track.

The effect of school desegregation on the interracial attitudes and behavior of black and white children has been the focus of great controversy and considerable research during the last two decades. The rather naive optimism which led many to believe that desegregation would almost automatically improve intergroup relations has been shown to be unfounded in fact. Although numerous studies suggest that school desegregation can have a positive impact on intergroup attitudes and behavior, a greater number reveal no effect or even a negative effect. (For reviews of the literature on this subject see Carithers, 1970; St. John, 1975; Cohen, 1975; Schofield, in press). Indeed, Gerard and Miller's (1975) recent massive longitudinal study of elementary school desegregation shows increased ethnic encapsulation in sociometric choice over time.

However, as Pettigrew (1967, 1973) has noted, most of the research on the effects of school desegregation has been conducted in schools which do not even begin to meet the criteria which Allport (1954) long ago argued were vital for promoting positive interracial attitudes and behavior: equal status within the contact situation, shared goals, cooperative dependence in reaching these goals, and the support of authorities, law, or custom. Pettigrew (1967) calls the mere mixing of students "desegregation" and distinguishes it from "integration", mixing under the circumstances specified by Allport's (1954) contact theory. There is a great deal of evidence supporting Allport's contention that mere desegregation does not necessarily result in more positive intergroup attitudes (Amir, 1969). However, there are relatively few studies of integrated schools which test contact theory's prediction that, if certain conditions are met, a positive change in intergroup relations will result.

The study reported here investigates the development of interracial interaction patterns in a public school which comes perhaps as close as we can realistically expect, at this point in our society's history, to meeting the Allport criteria. The following questions were raised about student interaction within this relatively ideal context:

1. Is race a significant determinant of the amount of student interaction? Previous studies suggest that race is an extremely important grouping criterion in desegregated schools (Carithers, 1970; Cusick and Ayling, 1971; Silverman and Shaw, 1973). Hence, it was hypothesized that in spite of the school's special efforts to foster positive relations between blacks and whites, students would tend to interact with others of their own racial group with greater than chance frequency.

2. Does grade level (6th, 7th, 8th) or sex influence the amount of interracial interaction which occurs? Previous work suggests that racial aggregation generally increases with age. For example, Aronson and Nobel (1966) found more interracial seating at the elementary school level than in high school. However, there are conflicting data about the precise nature of the age trends that can be expected with middle school children. For example, Criswell's (1937) classic work suggests that racial cleavage increases until fifth grade after which it may decline. On the other hand, Deutschberger (1946) found that voluntary interracial association continues until about thirteen when it drops off sharply. Further study of age trends in racial aggregation may help to clarify the presently conflicting findings.

It is generally accepted that black girls and white boys tend to have a somewhat more difficult time adjusting to a desegregated situation than black boys and white girls (St. John, 1975). However, the implications of this for interracial interaction at the middle school age when children tend to interact primarily with others of their own sex are very unclear. Hence, this study investigated sex differences in the absolute amount of interracial interaction occurring and in changes in interaction levels over time.

3. How does sex compare to race as a grouping criterion within the three grade levels studied? The few studies which have examined this question generally support Criswell's (1937) early finding of even greater aggregation by sex than by race, at least in the lower grades. However, there is very little data on the comparative strength of sex and race as grouping criteria for middle school students. Since the fairly strict informal sexual segregation of the elementary years generally begins to break down as children become adolescents, the relative amount of sexual and racial segregation might well shift at this time.

4. Finally, and most importantly: does the amount of interaction between black and white children increase over time? Contact theory would lead one to expect increased interaction in a school which provides an integrated experience for its students. Hence, it was hypothesized that interracial interaction would increase over the course of the year in the two grades (6th and 7th) which appeared to meet Allport's conditions quite fully. However, no prediction about the direction of change in interracial interaction was made for the eighth grade. Although this grade met contact theory's conditions in many ways, it, in

contrast to the other two grades, adopted a tracking policy which resulted in a heavily white accelerated academic group and a heavily black regular group. Thus, it violated contact theory's equal formal status provision in one very important way.

Previous research has, with few exceptions, relied upon sociometric techniques to gauge changes in intergroup behavior associated with interracial schooling. St. John's (1975) review summarizes nineteen studies in this area. Only two of these studies directly observed intergroup behavior; the rest used traditional sociometric techniques or questionnaires. Use of sociometric techniques for such purposes presents three major problems. First, the validation studies which suggest that sociometric choices actually reflect behavioral choices have been conducted in all white classrooms (Biehler, 1954; Bonney and Powell, 1953; Byrd, 1951). Whether the factor of race affects sociometric and behavioral choice patterns in an equivalent manner has yet to be determined. Second, the most frequently used sociometric techniques tend to tap behaviors which are relatively unlikely to change over short periods of time. Typically, sociometric measures require the child to give the names of a very small number of other children who are the most preferred companions for various types of activities. There is evidence suggesting that new children in a school, regardless of their race, do not immediately become fully integrated into the peer network (Willie, 1973), Hence, it seems unrealistic to expect that sociometric techniques would indicate marked changes in interracial behavior in the short time period covered by most desegregation studies even if the school came close to meeting Allport's (1954) criteria. Third, changes in the relatively intense relationships typically measured by sociometric techniques may

well be less crucial from a social policy viewpoint than changes in less intense but nonetheless important behaviors such as willingness to associate with members of the other group in public places.

In light of the above considerations, the present study utilized a behavioral measure of the amount of voluntary association between students--student seating patterns in the school cafeteria--rather than sociometric techniques to assess interracial interaction patterns.

METHOD

The School

Wexler Middle School, which serves about 1200 students in grades six through eight, first opened its doors in the fall of 1975. The student body, which is 48% black, was obtained through open enrollment of students from a large district in the Northeastern industrial city in which the school is located. A very large majority of the students had previously attended de facto segregated schools. The white students typically come from middle or upper-middle class homes. Although a few of the black children are middle class, the majority are from working or lower class homes. The large majority of students are transported to the school on busses which are heavily segregated because of the residential segregation of the neighborhoods in which the students live.

A wide variety of special facilities and programs were designed to attract students and to foster a shared pride in the school. Students were selected on a first-come first-serve basis within predetermined racial quotas. The school's unusual efforts to provide an ideal environment for interracial education have been documented elsewhere (Schofield, 1976). School authorities clearly endorse positive intergroup

relations and support an extensive program of activities designed to help students get to know one another. The fact that Wexler's students come from 26 different feeder schools is also conducive to the formation of new interaction networks since many children have none of their previous classmates in their new classes. The school's newness has greatly increased the opportunities for students to be cooperatively involved in working for shared goals. For example, large numbers of students participated in the formation of new special interest organizations and in a variety of fund-raising activities to purchase equipment for these clubs.

Wexler's commitment to fostering equal status contact is illustrated by its staffing. The top four administrative posts are evenly divided between blacks and whites. Similarly, each grade has two counselors, one white and one black. About 30% of the faculty are black. Black teachers tend, however, to be under-represented in the academic areas and somewhat over-represented in certain vocational education areas. More noticeably, all ten teachers' aides are black. These staffing imbalances reflect the pool of teachers available within the city school system.

Equal formal status for black and white students is supported by the policy adopted in the sixth and seventh grades of distributing black and white students into individual classes roughly in proportion to their numbers in that grade. Hence, although the black students tend to have noticeably lower reading scores than the whites they are not resegregated by a tracking system. The eighth grade, however, presents a very different picture. In order to enhance the ability of the school to attract students, a prestigious city-wide accelerated academic program is offered in Wexler's eighth grade. Students in

this program attend almost all classes together, mixing with others only in classes like homeroom and gym—and in the lunchroom, the setting of interest for this study. Approximately 80% of these students, who were chosen on the basis of test scores, are white. The rest of the eighth grade is heavily black.

Data Gathering

Coding of cafeteria seating patterns, as reported here, began in mid-February of the first year of Wexler's operation following the conclusion of a city-wide teachers' strike which had closed the school since late November.[1] Observations were made one day a week until the end of the school year in late June.

The cafeteria contains 32 rectangular tables. Each table has sixteen seats, eight on each long side. These seats are a part of the table units and cannot be moved. Elevated ramps along two sides of the cafeteria permit relatively easy and unobtrusive observation of the entire cafeteria. About ten minutes after the beginning of each grade's lunch period, observers began mapping seating patterns, using a simple numberical code to note the race and sex of the student in each occupied seat. Typically, each of two observers covered 16 of the 32 tables, thereby providing a map of the entire cafeteria.

The Aggregation Index

The indices of racial clustering were computed according to the formula developed by Campbell, Kruskal, and Wallace (1966) in their study of interracial seating patterns in college classrooms.[2] Somewhat analogous to a z-score, this index is based upon the difference between the actual frequency with which blacks and whites sit together and the expected frequency, given random distribution of the races

within the pattern of occupied seats. The expected frequency is based on the proportion of blacks in the sample and the number of adjacent pairs of individuals observed. Individuals are not considered adjacent if they are separated by an empty seat. The index uses a denominator yardstick which is the standard deviation of the number of interracial adjacencies under randomness. Negative values represent more aggregation than would be expected if individuals sat randomly with respect to race, whereas positive values represent less aggregation than would be expected under randomness.

Campbell et al's (1966) formula was developed to analyze only "side by side" seating in rows. However, interviews with a random sample of sixth graders suggested that students were about as likely to sit across from the persons they ate lunch with as they were to sit next to them. Hence, two indices of racial clustering were computed. First, an overall index of racial aggregation in side-by-side seating (Index 1) was computed treating the seats on each side of each table as rows of eight. Then, an index of face-to-face aggregation (Index 2) was computed treating each of the 256 pairs of face-to-face seats as rows of two. The two indices had a mean within grade correlation of .61.

Side-by-side (SS) and face-to-face (FF) racial aggregation indices were also constructed for males (Indices 3 and 4) and females (Indices 5 and 6) separately. Unfortunately, as Campbell et al (1966) note, their formula is based on a binary code (either "black" or "white") and does not permit ready analysis of the joint effects of race and sex. Hence, in computing the aggregation index for males, seats occupied by females were treated as empty. In the analysis of female

patterns just the opposite was true. Cross-sex adjacencies, whether intra- or inter-racial, were extremely rare. Silverman and Shaw's (1973) data which show that 90% of the interracial interactions in two junior high schools were between members of the same sex are consistent with our observations.

Finally, indices of aggregation according to gender were computed. In constructing the indices of side-by-side (Index 7) and face-to-face (Index 8) gender aggregation race was ignored. Each of the eight separate indices computed from each day's observation was treated as a single score in the following statistical analyses.

RESULTS

Race was found to be a powerful factor in student seating patterns for both sexes at all three grade levels throughout the course of the school year.[3] The mean racial aggregation indices for SS (Index 1) and FF (Index 2) were -1.63 ($t(48) = 51.27$, $p < .001$) and -1.57 ($t(48) = 37.84$, $p < .001$) respectively.[4] The equivalent indices for each of the three grade levels are presented in Table 1 along with parallel indices for males only (Indices 3 and 4) and females only (Indices 5 and 6). All of these means are significantly different from zero beyond the $p < .001$ level.[5]

INSERT TABLE 1

The actual amount of racial clustering indicated by the means in Table 1 can be illustrated by examining a typical observation from the sixth grade which yielded racial aggregation indices of -1.62 (SS) and -1.57 (FF). These indices were based on the seating locations of

138 white and 109 black students. Random distribution of these students within the pattern of occupied seats could be expected to have resulted in 67 SS and 41 FF interracial adjacencies. Thirteen SS and nine FF interracial adjacencies were found.

Further inspection of Table 1 reveals significantly less racial aggregation in the sixth grade than in the seventh and eighth which do not differ from each other. The t-tests show that this finding is consistent for both the overall SS and FF indices (Indices 1 and 2, $p < .001$,) and for both males ($p < .02$) and females ($p < .002$) considered separately (Indices 3-6). Greater aggregation in the eighth grade alone might be regarded as due to its tracking policy rather than to age trends. However, no parallel structural explanation is available for the equally aggregated seventh grade. These findings are quite consistent with Deutschberger's (1946) finding that voluntary interracial association drops off at the beginning of adolescence.

Table 1 further indicates more interracial interaction among males than females. This finding was consistent for both the SS and FF indices in each of the three grade levels studied ($p < .05$ in all t-tests).

Table 2 presents comparisons of the racial and sexual aggregation indices in all three grades. Although racial aggregation is highly significant, sex proved to be an even stronger grouping criterion on both indices. Perhaps not surprisingly, the difference is most marked in the sixth grade. By eighth grade the difference in SS is still statistically significant, but small, while comparison of the eighth grade FF indices reveals no difference in the amount of racial and sexual clustering.

INSERT TABLE 2

The question of greatest interest, whether the school's active efforts to foster positive intergroup relations were attended by an actual increase in voluntary interracial interaction over time, was investigated by computing the Pearson product-moment correlations between elapsed time and the indices of interracial aggregation. The statistically significant correlation for the SS index of racial aggregation (Index 1) in the sixth and seventh grades combined indicates increased interracial mixing over time as hypothesized. (See Table 3). Analysis of the results for boys and girls separately yields a statistically significant change over time on the SS index for the boys and a similar but non-significant trend for the girls. In contrast to the SS index, the FF index for the two grades combined does not show a statistically significant change over time.

INSERT TABLE 3

The correlation for the SS index (Index 1) with time is not statistically significant for the sixth grade taken alone. However, both the SS and FF indices show significant positive correlations in the seventh grade ($p < .05$). The complete time series for the seventh grade SS and FF indices are presented in Figure 1.

INSERT FIGURE 1

In the eighth grade, which was tracked into a heavily white accelerated group and a heavily black regular group, no positive trends were obtained. In fact, the FF index (Index 2) for this grade shows a statistically significant decrease in racial mixing over time. The time series for the eighth grade SS and FF indices are presented in Figure 2.

INSERT FIGURE 2

The aggregation indices, which serve well in testing the statistical significance of changes in interracial mixing, may not readily communicate the actual size of these changes. By way of illustration, then, consider the first and the final observations in the seventh grade. The initial SS aggregation index of -1.86 reflected only four interracial adjacencies among the 175 students coded, whereas 51 such adjacencies would have been expected under a random distribution of students within the pattern of occupied seats. The final SS index of -1.57 reflects 12 interracial adjacencies among 192 students -- three times the number observed on day one, but only about one-fifth of the 55 adjacencies expected under randomness.

DISCUSSION

The results presented above suggest that race is an extremely important grouping criterion even for children who have chosen to attend a desegregated school.[6] However, it is important to note that the sixth grade showed significantly less racial aggregation than the seventh and eighth grades. Hence, this study supports the widely held view that desegregation in the early grades is more

likely to be conducive to positive intergroup relations than is the desegregation of older children (Carithers, 1970, Pettigrew, 1967.)

The significant correlation between time and the side-by-side index of racial clustering confirmed the expectation, based on contact theory, that interracial contact in a school like Wexler will lead to improved intergroup relations.[7] This increase occurred in spite of the fact that in general the black and white children were from markedly different socioeconomic backgrounds and showed clear differences in average levels of academic achievement. The increase in interracial interaction despite the class and achievement disparities between groups is of both theoretical and practical interest. Social scientists like Pettigrew (1971; 1973) have argued that contact theory's equal status provision is met if both groups have equal access to specific resources and equal formal status within the contact situation. Others have argued that Allport's criterion of equal status cannot be truly met if personal characteristics like academic achievement which are brought into the contact situation give members of the two groups unequal informal status (Armor, 1972; St. John, 1975). The results from the sixth and seventh grades suggest that a contact situation carefully structured to give equal status to students with very different personal characteristics can indeed lead to increased interaction. The data from the eighth grade, however, suggest that formal differentiation of groups on the basis of such characteristics which resegregates them and reinforces traditional unequal status relations may vitiate whatever other efforts an institution may make to promote increasingly positive intergroup relations.

Examination of the two bottom rows of figures in Table 3 raises an interesting question about the two indices employed in this study. Why is it that a significant increase in mixing was found for the sixth and seventh grades on the SS index with little apparent change in the FF index whereas in the eighth grade the significant change, a decrease in mixing, occurred on the FF index with no significant change on the SS index? A reasonable although admittedly speculative explanation for this interesting pattern of results is suggested by the work of Silverstein and Stang (1976). These authors suggest that visual contact is better in face-to-face seating than in side-to-side seating and that such contact increases interaction rates. Hence, it seems reasonable to argue that voluntary face-to-face seating may be indicative of a somewhat higher degree of interracial interaction and acceptance than side-by-side seating which does not lead to so much eye contact. If this is true, one would naturally expect side-to-side seating to increase before face-to-face in a positive interracial environment since it connotes a somewhat lower level of acceptance. Similarly, in a somewhat negative environment face-to-face seating would decrease first since it connotes a relatively high level of acceptance.

The data suggest that the boys in all grades are more likely to interact interracially than the girls. Although time trends for boys and girls were in the same direction with one exception, these trends tended to reach statistical significance for the boys but not for the girls. Taken together these findings suggest that the girls tend to ignore members of the other race, so one finds both relatively little interaction and little change in levels of interaction. The boys on the other hand, appear to venture out of their racially

isolated groups and to interact more. Their reaction over time to this interaction appears to be quite strongly influenced by the structural characteristics of the contact situation.

One reasonable explanation for the difference in male and female patterns of interaction stems from analysis of traditional sex roles and the developmental stage of the children studied. Male sex roles have traditionally emphasized physical competition and prowess. Such an emphasis would naturally lead to intergroup contact since to establish a really meaningful position of dominance one has to be superior to both in-group and out-group members. Female sex roles have traditionally stressed beauty and attractiveness to the opposite sex. Also, girls of middle school age are more likely to have reached puberty and to evince the accompanying heightened interest in their attractiveness to the opposite sex than are boys. Thus, the girls of both groups may be more interested in attracting boys than in activities which would lead to their interacting frequently with out-group girls.

The data clearly suggest that truly integrated interracial schooling like that found in Wexler's sixth and seventh grades does foster increased voluntary association between blacks and whites. However, interpretation of the practical significance of the changes found is clearly a matter of individual judgement and perspective. The pessimist who values interracial association might note that the June data mentioned previously show that the actual number of interracial adjacencies in the seventh grade was about one-fifth of the number that would have resulted if race were not a grouping criterion. The optimist with the same values might note something quite different about the same data—the fact that the June data show over three

times as many adjacencies as the February data. The optimist would also stress the fact that these changes occurred in less than one full school year and in spite of the marked disparities between the black and white students in economic and academic backgrounds. Being optimists we are included to stress the promise that schools have as socialization agents which can prepare children for life in a pluralistic society. However, being realists, we would also agree that school experiences alone cannot be expected to rapidly undo the lessons which our nation's history and present day patterns of residential segregation and intergroup hostility also teach.

REFERENCES

Allport, G.W.

1954 The nature of prejudice. Cambridge, Mass.: Addison - Wesley.

Amir, Y.

1969 "Contact hypothesis in ethnic relations." Pp. 319-342 in Psychological Bulletin, 71.

Armor, D.J.

1972 "The evidence on busing." Pp. 90-126 in the Public Interest, 28, Summer.

Aronson, S. and Noble, J.

1966 "Urban-suburban school mixing: A feasibility study." West Hartford Board of Education, (mimeographed).

Biehler, R.F.

1954 "Companion choice behavior in the kindergarten. Pp. 45-50, Child Development, 25.

Bonney, M. and Powell, J.

1953 "Differences in social behavior between sociometrically high and sociometrically low children." Pp. 481-495 in Journal of Education Research, 46.

Byrd, E.

1951 "A study of validity and constancy of choices in a sociometric test." Pp. 175-181 in Sociometry, 14.

Campbell, D., Kruskal, W., and Wallace, W.

1966 "Seating aggregation as an index of attitude." Pp. 1-15 in Sociometry, 29.

Carithers, M.

1970 "School desegregation and racial cleavage, 1954-1970: A review of the literature." Pp. 25-47 in Journal of Social Issues, 26.

Cohen, E.

1975 "The effects of desegregation on race relations." Pp. 271-299 in Law and Contemporary Problems, 39 (2).

Criswell, J.H.

1937 "Racial cleavage in Negro-White groups." Pp. 81-89 in Sociometry, 1.

Cusick, P. and Ayling, R.

1971 "Racial interaction in an urban secondary school." Paper presented at meeting of the American Education Research Association, New Orleans.

Deutschberger, P.

1946 "Interaction patterns in changing neighborhoods." New York and Pittsburgh. Pp. 303-315 in Sociometry, 9.

Gerard, H. and Miller, N.

1975 School Desegregation. New York: Plenum Press.

Pettigrew, T.F.

1967 "Social evaluation theory: convergences and applications." In D. Levine (ed.), Nebraska Symposium on Motivation, Vol. 15, Lincoln, Nebraska.

1971 Racially separate or together. New York: McGraw Hill.

1973 "Busing: a review of the evidence." Pp. 88-118 in Public Interest, 30, Winter.

Schofield, J.

1976 "Ethnographic study of a nearly integrated middle school." Unpublished manuscript. University of Pittsburgh.

In press. "School desegregation and intergroup relations." In D. Bar-Tal and L. Saxe, Social Psychology of Education: Theory and Research. Washington, D.C.: Hemisphere Publishing Co.

Silverman, I. and Shaw, M.E.

1973 "Effects of sudden mass desegregation on interracial interaction and attitudes in one southern city." Pp. 133-142 in Journal of Social Issues, 29 (4).

Silverstein, C. and Stang, D.

1976 "Seating position and interaction in triads: A field study." Pp. 166-170 in Sociometry, 39.

St. John, N.

1975 School Desegregation: Outcomes for Children. New York: Wiley.

Willie, C.

1973 Race Mixing in the Public Schools. New York: Praeger.

FOOTNOTES

1. Mapping of randomly selected tables actually began in the fall, shortly after the school opened. Because only a small minority of tables showed any racial mixing during any observation, the daily aggregation index fluctuated greatly depending upon the particular table selected. Because of this high variance, these early data are difficult to interpret and have been excluded from the present analyses. Hence, this paper is based on the later observations during which all 32 tables were mapped.

2. This rather complex formula and its derivation is described in detail in the Campbell et al (1966) article.

3. The possibility that these aggregation tendencies developed between the beginning of the school year and the post-strike observation period reported here can be dismissed by examination of the unreported pre-strike data. Despite the variability of this early data, all aggregation indices from all observations were strongly negative, indicating minimal interracial mixing.

4. The authors are aware of the contradiction inherent in using repeated observations over time to estimate single "true" values or means when, in the same paper, they test the hypothesis that some of these values change over time. However, the obtained changes are modest enough, and some of the differences between groups and indices are large enough, that it seems worthwhile to report and (with caution) compare these arithmetic means.

5. Our use of the t-statistic, which assumes a sample of independent observations drawn from a normally distributed population to analyze this data is somewhat unconventional. The population we are sampling

here does not consist of the students in the cafeteria, most of whom were observed many times over. Rather, our population is the nearly infinite number of constantly changing seating patterns which occurred in the cafeteria during the course of the study. Each recorded pattern is "drawn" from this total population. The fact that many of the same students are observed each time does not seem to be a problem since we are attempting to estimate the mean indices which would derive if we had observed the seating of all these students all the time.

6. It is, of course, impossible to tell from the data presented here how much of the racial aggregation found was due to a tendency toward social class aggregation. Unfortunately, the high correlation of race and social class seems likely to present practical problems to those concerned about desegregated schools as well as inferential problems to researchers. Differences in behavior and interpersonal style due to social class may well be attributed to race since race is much more readily apparent. This, in turn, might well reinforce racial prejudice and tendencies to racial aggregation.

7. It is conceivable that the time trends found in this study are due to factors other than the nature of the specific interracial contact situation which the students experienced. One's confidence in the interpretation of the time trends presented in this paper would be increased if a suitable school could have been found to serve as a control. However, there was no other "merely desegregated" middle school in the city studied even reasonably similar to the "integrated" school studied in its racial composition and its lunchroom arrangements. Since community attitudes towards desegregation seem likely to have a very real impact on intergroup relations in the school,

a control school in another city was not sought. The clear way in which the time trends found were associated as hypothesized with structural factors affecting equal status in the school and the lack of plausible alternative explanations which account for the different trends in the various grades suggest that the present interpretation is justified.

TABLE 1

Mean Racial Aggregation Indices

Grade level	n of observations	Overall		Males only		Females only	
		SS (Index 1)	FF (Index 2)	SS (Index 3)	FF (Index 4)	SS (Index 5)	FF (Index 6)
6	(15)	-1.39	-1.29	-1.20	-1.16	-1.60	-1.44
7	(17)	-1.71	-1.66	-1.51	-1.44	-1.82	-1.82
8	(17)	-1.77	-1.77	-1.65	-1.49	-1.84	-1.84
Overall	(49)	-1.63	-1.57	-1.47	-1.37	-1.76	-1.71

Note: Larger negative numbers represent greater aggregation.

TABLE 2

Comparison of Racial and Sexual Aggregation

Grade level	Type of index	n of observations	Grouping factor: Race	Grouping factor: Sex	t	p
6	SS	(15)	-1.39	-1.94	11.24	$<.001$
	FF	(15)	-1.29	-1.86	6.73	$<.001$
7	SS	(17)	-1.71	-1.94	5.46	$<.001$
	FF	(17)	-1.66	-1.90	10.00	$<.001$
8	SS	(17)	-1.77	-1.86	3.15	$<.01$
	FF	(17)	-1.71	-1.73	1	$<$ n.s.
Overall	SS	(49)	-1.63	-1.91	7.95	$<.001$
	FF	(49)	-1.57	-1.83	5.63	$<.001$

TABLE 3

Changes in Racial Aggregation

Grade level	n of observations	Overall		Index Males only		Females only	
		SS (Index 1)	FF (Index 2)	SS (Index 3)	FF (Index 4)	SS (Index 5)	FF (Index 6)
6	(15)	.32	-.12	.40	-.11	.14	-.13
7	(17)	.44*	.45*	.38	22	.23	.40
8	(17)	-.05	-.53*	.25	-.58*	-.18	-.27
6 and 7 combined	(32)	.37*	.03	.39*	.01	.18	.04

Note. Positive correlations represent decreasing racial aggregation (i.e., greater interracial mixing) over time. Significance levels for correlations in the sixth and seventh grades are for one-tailed tests whereas those for the eighth grade are two-tailed since directional hypotheses were not formulated.

*$p < .05$

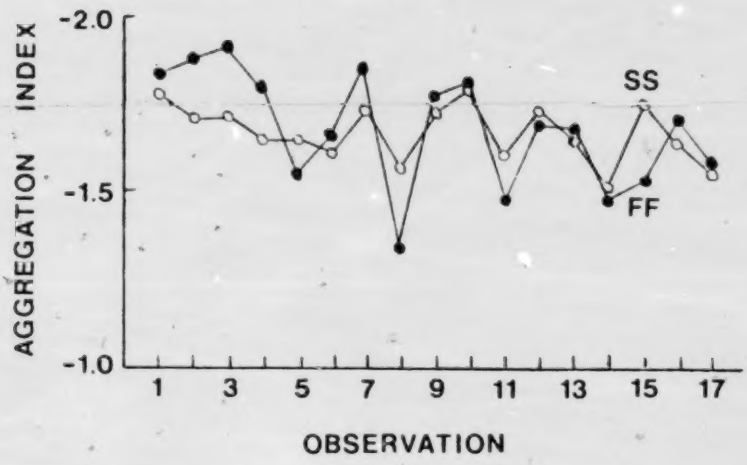

Figure 1. Weekly side-by-side (SS) and face-to-face (FF) indices of racial aggregation in the seventh grade (Larger negative values indicate greater aggregation).

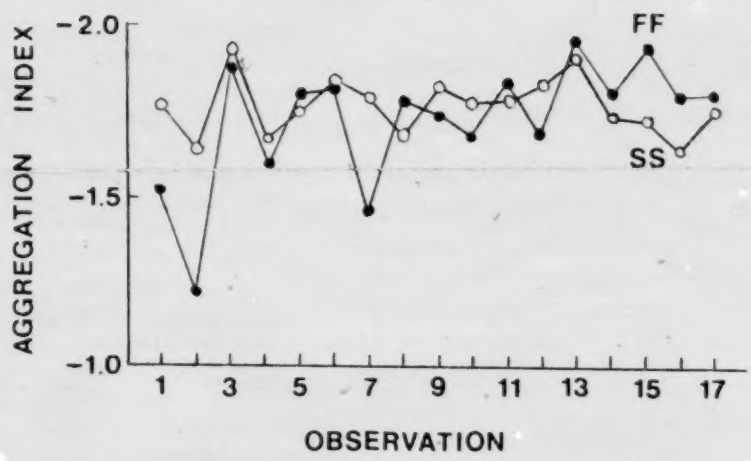

Figure 2. Weekly side-by-side (SS) and face-to-face (FF) indices of racial aggregation in the eighth grade (Larger negative values indicate greater aggregation).